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ENVIRONMENTAL RISK DISCLOSURE AND COST OF EQUITY

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Abstract: Environmental problems are increasingly becoming a concern of various parties. When other studies look more at environmental performance, this study focuses on environmental risk disclosure. The purpose of this study is to empirically test the relationship of environmental risk with the cost of equity. Environmental risk disclosure is measured using content analysis. The cost of equity is calculated using the Capital Assets Pricing Model (CAPM) method. The study sample consisted of 476 companies listed on the Indonesia stock exchange in 2016-2018. The data is processed using SPSS with multiple linear regression methods. Empirical results show that environmental risk disclosure has a positive effect on the cost of equity. The results of this study contribute by expanding the disclosure theory because it empirically proves that investors use environmental risk information.

Keywords: Risk; Environmental; Cost of Equity; Investor Reaction; Disclosure; Environmental Performance

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Introduction

This study focuses on risk and environmental performance, because the environmental impacts arising from the company's operations are increasing. Nowdays, countries facing sudden and rapid industrial growth often cause serious problems that must be immediately controlled. Some examples in Indonesia, the mining case of PT. Newmont, which disposed of large amounts of waste, causing pollution and disrupting the ecosystem. Another case that can be used as evidence of the occurrence of negative externalities from industrialization is environmental damage by PT. Riau Andalan Pulp and Paper. The high production capacity of PT. Riau Andalan Pulp and Paper makes them have to cut down large amounts of trees so that the condition of the forest getting worse. Based on the previous explanation, companies that do not pay attention to the environment in their operational activities will cause damage and encourage the occurrence of risks in various forms, such as litigation risk, risk of regulatory violations, and reputation risk (Bazillier et al., 2017; Kim et al., 2015). Thus, environmental risk will increase the overall risk of the company and ultimately the risk will affect investor decisions. In

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general, investors will ask for a higher rate of return on their investment in companies with greater risk.

Research on disclosure and its consequences has not been fully explored, especially non-financial disclosures, and this study focuses on disclosure of environmental risks. Research on the relationship between environmental activity and its impact on the capital market still shows results that are less consistent, or not conclusive, resulting in a research gap. The gap regarding the benefits of environmental responsibility for companies and investors. Investors consider companies with good environmental responsibility to have a small risk, so that the company's market value will increase. Kelly and Ljungqvist (2012) show that the cost of equity will decrease if the information disclosed in company reports increases. Derwall et al., (2005) wrote that companies that care about the environment have a higher stock return, because environmentally friendly companies are considered to have lower risks. Klassen and McLaughlin (2008) also provides empirical results, namely the existence of a positive abnormal return when there is an award announcement for environmental performance. Conversely, several studies found different results. Lioui and Sharma (2012) argue that investors consider that environmental activities carried out will add to the company's burden. Oberndorfer et al., (2013) showed that German companies listed on the sustainability index tended to get negative stock returns.

This study aims to test empirically the effect of environmental risk on the cost of equity. Some studies prove that risk disclosure has consequences on the capital market. In addition, disclosure of risk is different from other disclosures made by the company, because it provides information about possible future conditions, and often risk information is considered to have a negative nature. When environmental risk disclosures are considered to have a negative nature, investors will respond negatively. This is contrary to the disclosure theory which says that company disclosures will have a positive impact. Therefore this study attempts to analyze the impact of disclosure of environmental risks in Indonesia (Siskawati et al., 2016).

The results of this study will provide two benefits. First, this study contributes to the accounting and financial literature, namely expanding the disclosure concept of by analyzing whether environmental risk is one of the information used by investors. Secondly, the results of this study are expected to be used by policy makers and standards, namely Otoritas Jasa Keuangan (OJK) in Indonesia by showing empirical evidence regarding the need for attention to environmental issues, because it provides high economic consequences for the company. This is expected to encourage OJK to make regulations regarding the disclosure of more detailed and binding environmental risks, so that environmental sustainability is maintained and ultimately the risks to investors are reduced.

Environmental Risk Disclosure and Cost of Equity

Botosan (1997) describes the relationship between disclosure and the cost of equity of a company supported by two streams - first, information asymmetry in the

capital market can be reduced if the company is willing to provide more information. This view shows that better disclosures increase high market liquidity shares thereby reducing the cost of equity both from reducing transaction costs or from increasing demand for securities companies. Second, it shows that more disclosures reduce the cost of equity by reducing non-diversifiable estimates. Thus, there is uncertainty about the correct standardization when companies lack information. If the risk of estimation cannot be diversified, the investor asks for compensation because of the increase in the risk element. However, there is no agreed consensus regarding the ability of risk to be diversified. Previous research on environmental risk and cost of equity has focused more on the use of greenhouse gas measurements as a proxy for environmental risks. Nguyen (2018) discusses the effects of carbon risk on the performance of companies in Australia. The study said that companies in the industry with the highest pollution experienced a decline in financial performance compared to companies in industries with normal pollution. Sakhel (2017) uses perceptions to assess climate risk and preventive measures taken, then compared between industries regulated by climate policy and those not regulated. The results show that many companies feel less exposed to actual climate risk, but instead are exposed to regulatory risk. In addition, the results show that companies in regulated industries implement response measures that are more responsive than companies that are part of an unregulated industry.

More detailed risk disclosures are usually carried out by companies with a high level of risk, because they need to explain why there is a possibility of exposure to these risks. In addition, the company also needs to inform shareholders about how to manage this risk and ultimately provide a higher level of risk disclosure. Therefore, it can be said that many risk disclosures mean having a high level of risk. When company risk is high, investors will ask for higher premiums for their investments (Linsley and Shrives, 2006). Information about company risk becomes something that is needed by investors, because this information provides an overview of the conditions that may be faced by the company in the future, thus affecting the value of the company. in addition, transparency of information about risk will reduce investor information risk because the quality of the report is getting better and the less likely the company to hide the actual conditions (Scott, 2014).

In contrast, The Institute of Chartered Accountant of England and Wales argue that companies that disclose more risk information will make the market understand the conditions and potential risks of the company so that they are considered less risky than others. Therefore, an increase in risk disclosure can have an impact on the level of corporate risk that is felt, even though the extent to which it is unknown. Because the relationship of risk disclosure, especially environmental risk with the cost of equity is not consistent, this study follows the theory of disclosure which says that the more information disclosed, the lower the cost of equity. Hypothesis of the study is environmental risk disclosure is negatively related to the cost of equity.

Research Methodology

The sample of this study is the companies listed on the Indonesian stock exchange in 2016-2018 and included in the high profile industry category. Companies in high profile kateogori have an impact on the environment and climate change. Our final sample consists of 476 firm years. We collect financial data from TICMI (The Indonesia Capital Market Institute).

The method used to measure environmental risk disclosure in this study is content analysis. this method is a method that many previous studies used to assess disclosure (Amran et al., 2009; Gray et al., 1995; Schuster and Weber, 2006). Milne and Adler (1999) propose the use of "sentences" as a basis for coding that is far more reliable than other analysis units. This study uses keywords to identify risk disclosures in the report. Following Elshandidy and Shrives (2016), this study defines risk not only as a negative side such as potential loss or threat but also a positive side that reflects potential gains and opportunities. Next, identify negative risk reporting by calculating the number of statements containing at least one of the following words: fight, disaster, challenge, decline, decrease, failure, lack, loss, low, risk, deficiency, threat, incapable, uncertain (uncertainty). Identify positive risk disclosures by calculating the number of statements containing at least one of the following words: opportunity, diversification, profit, increase and peak.

Cost of equity is the rate of return that must be offered to compensate investors for the capital they provide (Botosan and Plumlee, 2005). The required return from the investor's point of view has the same meaning as cost-of-capital from the point of view of the company. Based on these definitions, the cost of equity will be measured using the Capital Asset Pricing Model (CAPM) approach with the following formula:

$$COE_{it} = R_{ft} + \beta_i (R_{mt} - R_{ft}) \quad (1)$$

The value of the cost of equity is calculated with a period of one month after the annual report is issued, in other words the window period is thirty days from the time the report is published. This period requires investors to receive and process information about environmental disclosures, similar to the research of (Joseph et al., 2017).

The data analysis technique used in this study was using pooled regression with version 24.0 of SPSS software. The research model is as follows:

$$CoE_{i,t} = \beta_0 + \beta_1 ENRisk\_disc_{i,t} + \beta_2 LEV_{i,t} + \beta_3 PBV_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 ROA_{i,t} + e \quad (2)$$

Where: $CoE_{i,t}$ is the cost of equity calculated by the CAPM method; $ENRisk\_disc_{i,t}$ is environmental risk disclosure which is coded one if the disclosure is more than average and zero if otherwise. Leverage is measured as the ratio of debt to assets; Price-to-book ratio (PBV), measured by market value divided by the book value of equity; SIZE is measured by natural logarithms of total assets; ROA is calculated by dividing net income after tax (before income or other expenses such as interest costs) by the company's total assets.

Additional testing

In Indonesia, disclosure of environmental risks is voluntary, although there are already several regulations related to environmental issues. First, Bapepam issues regulation Number X.K.6 : Kep-431 / BL / 2012 concerning Submission of Annual Report of Issuers or Public Companies. The regulation requires disclosure of company risk, but does not specifically mention environmental issues. Second, Law No. 40 of 2007 Article stipulates that the company operating the business as a direct or indirect use of natural resources should conduct social and environmental responsibility. Third, Environmental Law No.32 of 2009 concerning Environmental Protection and Management. All of these regulations require environmental care activities, so this study includes environmental performance variables in the model (3)

$$CoE_{i,t} = \beta_0 + \beta_1 ENRisk_{i,t} + \beta_2 ENPerf_{i,t} + \beta_3 LEV_{i,t} + \beta_4 PBV_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 ROA_{i,t} + e \quad (3)$$

This study uses a disclosure index developed by Clarkson et al., (2008) that focuses on environmental disclosures. The Clarkson Index is made by involving experts in the field of environmental reporting to develop content analysis indices that are suitable for social responsibility report reports. This study modifies the (Clarkson et al., 2008) disclosure index because in the index there are risk disclosure items, which will be measured separately in different variables.

Result

The results of empirical testing to answer the research hypothesis which suggests that disclosure of environmental risk has an effect on the cost of equity can be seen in the first column of table 1. the second and third columns are additional tests to enrich the results of the study. The results of goodness of fit Model 2 in the first column of Table 1 show the adjusted r-squared value of 0.025, which means that the ability of the model to explain the dependent variable is only around 2.5 percent and the remainder is determined by other variables outside the model. This small value is because disclosure of environmental risk is one of the types of information presented in company reports.

Return on assets shows a negative coefficient of the cost of equity with a significance level below 10 percent. this is in accordance with the results of previous studies, companies with good performance will tend to have a low cost of equity. Likewise with size variables that have a significant negative sign, meaning that the larger the size of the company, the smaller the cost of equity because it is considered to have a small risk.

Table 1. Environmental risk disclosure and cost of equity

	Dependen : Cost of Equity (CoE)		
	(1)	(2)	(3)
Constanta	15.432	18.552	18.846
ENRisk	0.629	0.367	0.717
	(1.464)*	(0.832)	(1.349)*
ENPerf		6.769	23.648
		(2.386)***	(1.621)*

ENRisk*ENPerf			-17.300
			(-1.179)
ROA	-0.025	-0.027	-0.029
	(-1.286)*	(1.410)*	(-1.482)*
LEV	0.004	0.010	0.012
	(0.065)	(0.160)	(0.177)
PBV	0.004	0.002	0.001
	(0.116)	(0.051)	(0.020)
SIZE	-0.492	-0.608	-0.629
	(-3.867)***	(-4.482)***	(-4.598)***
n	476	476	476
Adj R-squared	0.025	0.038	0.036
F-statistic	3.440***	4.080***	3.496***
Note: † p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001			

The results of testing model 3 in the second column of Table 1, ENPerf have a positive coefficient of 6.769 with a p-value of less than one percent. In the third column, the results of the interaction test for ENRisk and ENPerf variables show insignificant results, so that ENPerf can not affect the relationship between ENRisk and the cost of equity.

Discussion

The hypothesis testing shows a significant relationship between environmental risk disclosure and the cost of equity. This positive relationship between environmental risk disclosure and cost of equity is not in line with the disclosure theory which says that the more disclosures made will reduce information asymmetry and will ultimately reduce the cost of equity. The difference in this direction is probably because the type of information that is expressed has a different nature. Kim and Yasuda (2018) said that disclosure of the company's business risk has a unique nature, in the sense that the disclosure is about negative things that have the potential to affect the company's future performance. Therefore, it is not clear whether this information reduces or increases the cost of equity.

Campbell et al., (2014) prove that companies that have a greater risk reveal more risk information. Kravet and Muslu (2013) also said that risk disclosure indicates unknown contingencies and will increase market perceptions of risk and uncertainty. The argument supports the results of this study, Indonesian investors consider that information about environmental risks is a matter of concern. Investors assess environmental risk due to poor performance such as lawsuits and regulatory exposures causing uncertainty about future cash flows. It can be said that risk is another important determinant of investment efficiency. Panousi and Papanikolaou (2012) demonstrate the idiosyncratic risk has a negative relationship with the company's external financing. So that when the risk increases, it will be difficult to get external financing.

Environmental performance actually has a negative impact on the value of cost of equity, the more environmental activities carried out will increase the company's cost of equity. This finding contradicts the theory of voluntary disclosure, and several previous studies (Dhaliwal et al., 2011; El Ghoul et al., 2011; Gupta, 2018) that prove that corporate social and environmental responsibility has a negative effect on the cost of equity.

The positive influence of environmental performance on the cost of equity can be explained for several reasons. First, maybe a social responsibility investment by a company consistently has a negative present value that increases the overall risk of the company. In general, companies that undertake social and environmental responsibilities will get potential savings in strategic costs and benefits in the long run (Porter and Linde, 2011; Schaltegger and Figge, 2002), markets may have different views. Second, the Cost of equity is a required return offered by the company to its shareholders to compensate them for owning shares and taking the risk of the shares (Fama and French, 1992). Based on these reasons, maybe investors in Indonesia are unwilling to accept lower returns because the company does a lot of environmental activities. Finally, the research data looks at the short-term impact, the calculation of the cost of equity is done within one month after disclosure of environmental performance. To see a decrease in the cost of equity, a longer time may be needed.

Conclusion

The empirical test results show that environmental risk information and environmental performance have consequences on investor decisions. When environmental risk information is given together with environmental performance information, investors will only use environmental performance information.

The implication of this study on the practical side is that regulatory and regulatory bodies can understand that regulations or standards regarding disclosure of environmental risks need not be made, and focus more on regulations regarding disclosure of environmental performance. Implications from the theoretical side, this study is able to expand the theory of disclosure, especially in the category of disclosure consequences on the capital market. Disclosure of environmental risks has consequences on the capital market in Indonesia.

This study has several limitations that cannot be avoided, there are elements of subjectivity when carrying out content analysis, namely in determining the disclosure of environmental risk and environmental performance. Some suggestions that can be used for further research are using another proxy to measure the cost of equity, and use quantitative values to look at the company's environmental risks.

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UJĘCIE RYZYKA ŚRODOWISKOWEGO A KOSZT KAPITAŁU

Streszczenie: Problemy środowiskowe stają się coraz bardziej przedmiotem troski z różnych stron. Gdy inne badania bardziej skupiają się na efektywności środowiskowej, niniejsze badanie koncentruje się na ujawnieniu ryzyka środowiskowego. Celem tego badania jest empiryczne przetestowanie związku ryzyka środowiskowego z kosztem kapitału własnego. Ryzyko środowiskowe jest mierzone za pomocą analizy treści. Koszt kapitału własnego obliczany jest przy użyciu metody Capital Assets Pricing Model (CAPM). Próba badawcza składała się z 476 spółek notowanych na giełdzie indonezyjskiej w latach 2016-2018. Dane są przetwarzane przy użyciu SPSS z wieloma metodami regresji liniowej. Wyniki empiryczne pokazują, że ujawnienie ryzyka środowiskowego ma pozytywny wpływ na koszt kapitału własnego. Wyniki tego badania przyczyniają się do rozszerzenia teorii ujawnień, ponieważ empirycznie dowodzą, że inwestorzy wykorzystują informacje o ryzyku środowiskowym.
Słowa kluczowe: ryzyko; Środowiskowy; Koszt kapitału własnego; Reakcja inwestora; Ujawnienie; Efektywność środowiskowa.

环境风险披露与股权成本

摘要:环境问题日益成为各方关注的问题。当其他研究更多地关注环境绩效时，本研究将重点关注环境风险披露。本研究的目的是通过实证检验环境风险与公平成本之间的关系。使用内容分析来衡量环境风险披露。权益成本使用资本资产定价模(CAPM)方法计算。研究样本包括2016 - 2018年在印度尼西亚证券交易所上市的476家公司。使用具有多种线性回归方法的SPSS处理数据。实证结果表明，环境风险披露对权益成本有正向影响。这项研究的结果有助于扩大披露理论，因为它凭经验证明投资者使用环境风险信息
关键词:风险;环境;股本成本;投资者反应;信息披露;环保性能。